

C L A I M S

1. A process for controlling two or more properties of a lubricant or working fluid for use in a system in which operating conditions change which process comprises:

- 5 (i) providing a base fluid in which the two or more properties are optimal for "warm" operating conditions;
- (ii) providing a diluent which is miscible with said base fluid under all system operating conditions; and
- 10 (iii) reversibly diluting said base fluid with the diluent in response to change in system operating conditions.

2. Process according to claim 1, wherein the two or more properties are viscosity and one or more additional properties selected from traction coefficient, compressibility, lubricating film thickness or pressure response of viscosity.

3. Process according to claim 1 or claim 2, wherein the base fluid has a traction coefficient which is greater than 0.08 (at 2.2 % SRR and 1.125 GPa) and a viscosity of less than 100 mPas in the temperature range 90 to 150 °C.

4. Process according to any one of claims 1 to 3, wherein the base fluid comprises a hydrogenated mixture of dimers and trimers of α -methyl styrene.

5. Process according to claim 1 or claim 2, wherein the base fluid comprises glycerol and one or more additional components selected from alkylene glycols and/or polyoxyalkylene glycols.

6. Process according to any one of claims 1 to 4, wherein the diluent is chosen from a fluid comprising a

mixture of cis and trans isomers of decahydronaphthalene and a fluid comprising methyl-substituted and ethyl-substituted cyclohexanes with 9 carbon atoms on average.

7. Process according to any one of claims 1 to 4,
5 wherein the diluent comprises a mixture of hydrocarbons and/or organic esters having a boiling range within the range of from 50 to 200°C.

8. Process according to claim 5, wherein the diluent is water.

10 9. A process for lubricating a system in which operating conditions change which process comprises
(i) controlling two or more properties of a lubricant in accordance with the process of any one of the preceding claims; and

15 (ii) applying the resultant lubricant to the system.

10. A process for providing a working fluid to a system in which operating conditions change which process comprises

20 (i) controlling two or more properties of the working fluid in accordance with the process of any one of claims 1 to 8; and

(ii) supplying the resultant working fluid to the system.

11. A process according to any one of the preceding claims wherein the step of reversible dilution involves a
25 step of removing diluent from a mixture of base fluid and diluent by evaporation or distillation and energy generated by the system is used to provide at least part of the energy required for this step.

12. A process according to claim 11 wherein the energy
30 generated by the system is supplied from one or more of:

(i) hot water from the system cooling system;

(ii) lubricant or working fluid that has already passed through an evaporation or distillation stage;

(iii) heat of vaporisation from hot vapour in a distillation or evaporation chamber;

5 (iv) exhaust gases; and

(v) an electrical heating stage.

13. An apparatus for carrying out the process of any one of the preceding claims which comprises:

(i) reservoir means comprising a diluent;

10 (ii) a mixing zone comprising a base fluid;

(iii) dispensing means for supplying the diluent from the reservoir means to the mixing zone;

(iv) separating means for removing diluent from the mixing zone by vaporisation, condensation and
15 storage of diluent for re-use; and

(v) means enabling the contents of the mixing zone to contact an operating component of the system.

14. Use of a working fluid composition comprising water as a diluent and a base fluid which comprises glycerol and one or more additional components selected from alkylene glycols and/or polyoxyalkylene glycols in a hydraulic system.

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